Dec. 31, 1940. F. PARR ET AL 2,227,362

CALENDAR CLOCK

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Fig. 1.

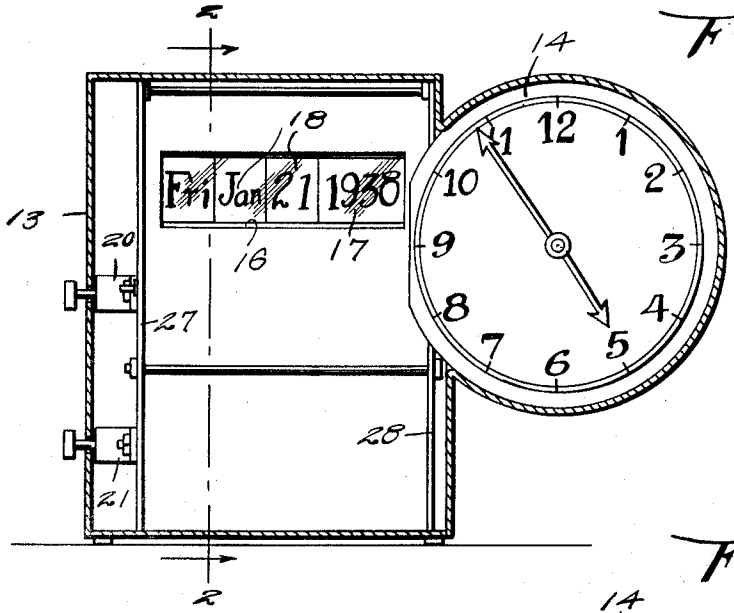


Fig. 2.

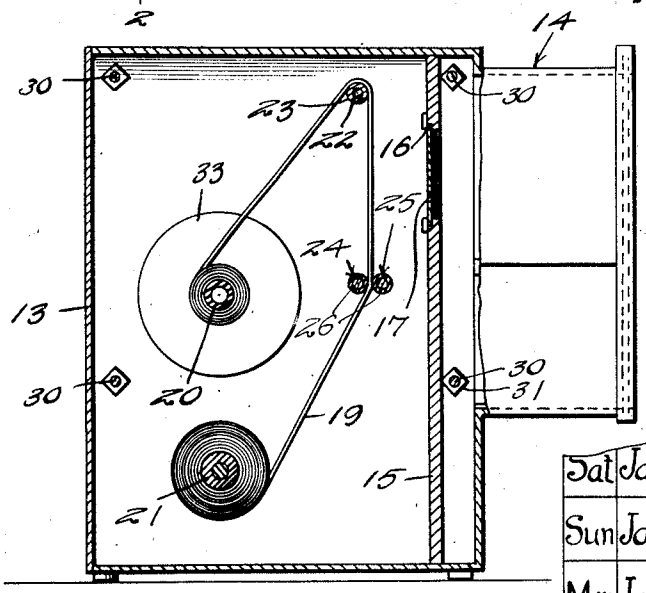
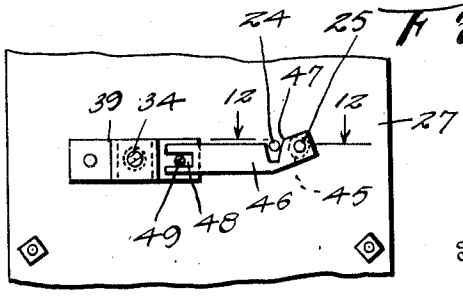


Fig. 8.

Sat	Jan	22	1938
Sun	Jan	23	1938
Mon	Jan	24	1938
Tue	Jan	25	1938

19
18

Fig. 7.



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Fig. 3.

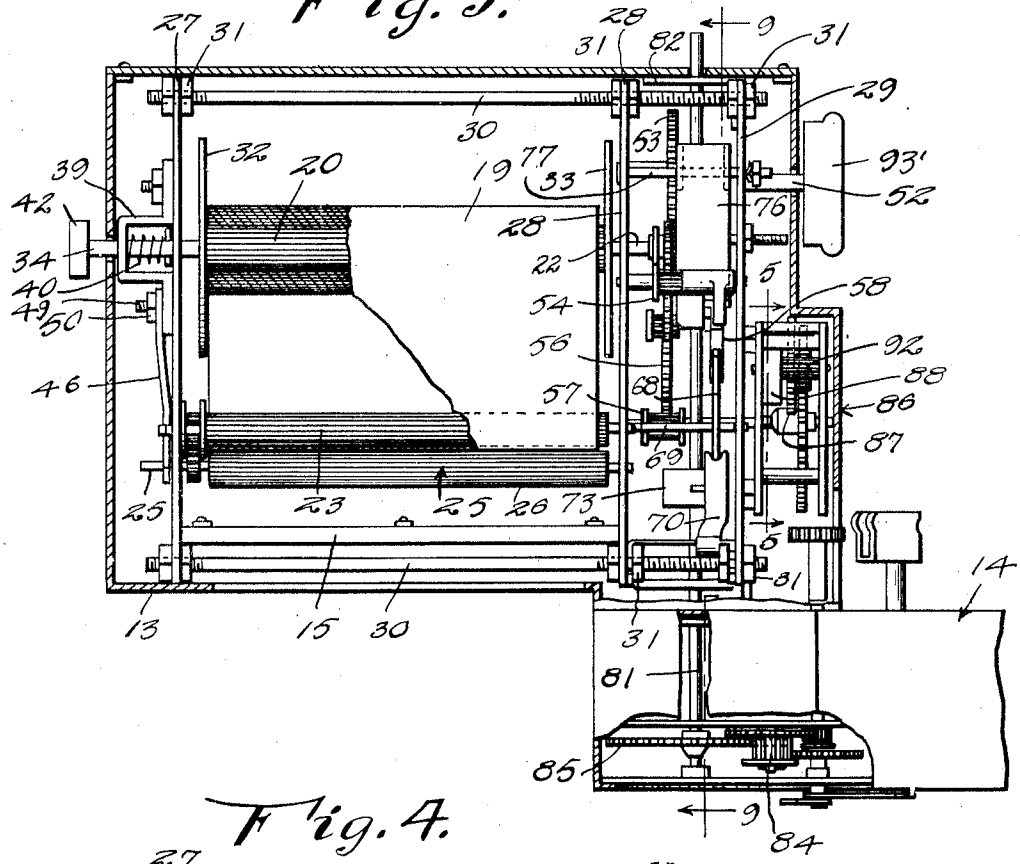


Fig. 4.

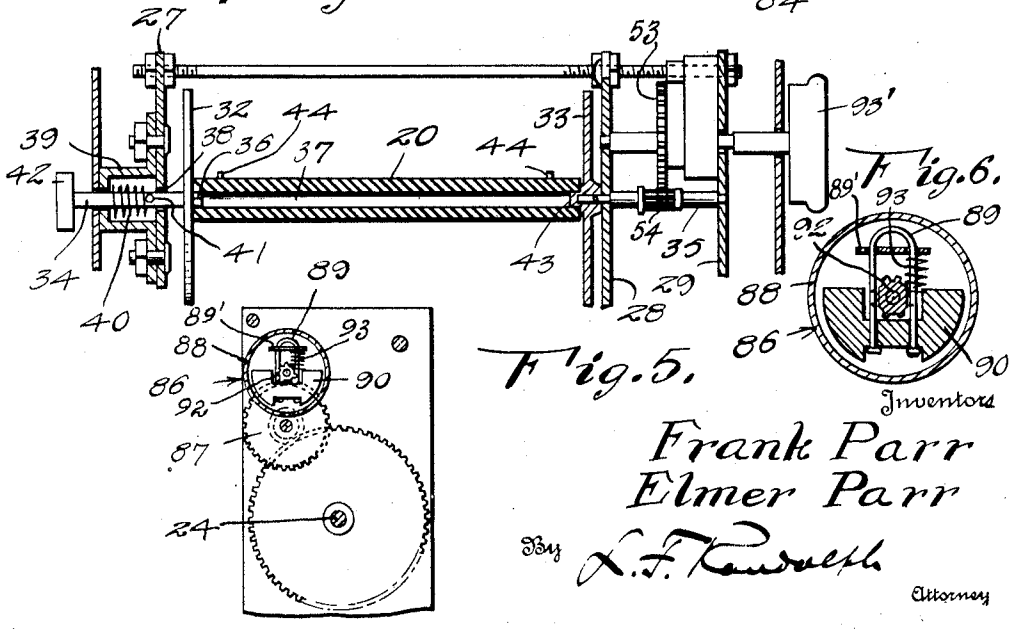


Fig. 5.

Fig. 6.

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Fig. 9.

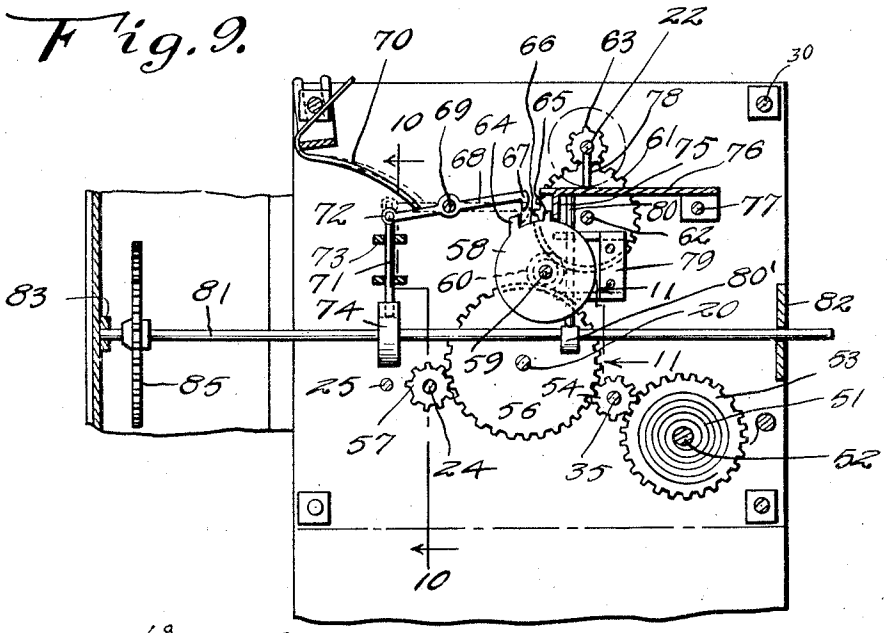


Fig. 10.

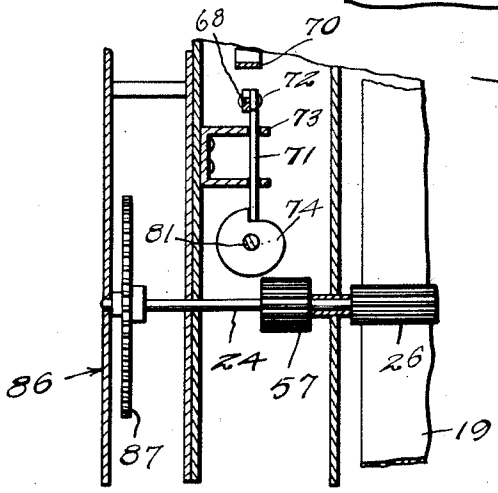


Fig. 11.

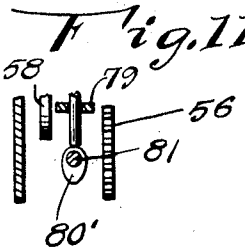
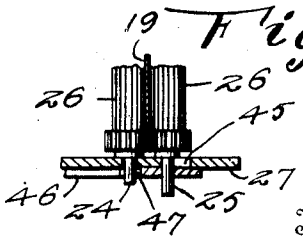


Fig. 12.



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Patented Dec. 31, 1940

2,227,362

UNITED STATES PATENT OFFICE

2,227,362

CALENDAR CLOCK

Frank Parr and Elmer Parr, Mountain Lake, Minn.

Application July 19, 1938, Serial No. 220,104

2 Claims. (Cl. 58—6)

This invention relates to a calendar clock.

It is aimed to provide a novel and simplified durable construction of calendar clock capable of operation by spring motor mechanism or by an electric motor or the equivalent.

It is especially aimed to provide a structure wherein a date tape or web is employed in connection with mechanism, for its operation, which will avoid danger of tearing of the strip, and a construction which may be governor controlled to take care of excessive speed incidental to tripping.

It is further aimed to provide a structure which may be used in connection with clock mechanism initially and may also be used as an attachment, when desired, and also used in connection with clocks for all purposes, that is for home, office, vehicles and the like.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:

Figure 1 is a view primarily in front elevation but partly in section, showing the improved calendar clock;

Figure 2 is a vertical sectional view taken substantially on the plane of line 2—2 of Figure 1;

Figure 3 is a plan view of the calendar clock, partly broken away and partly in section to disclose details;

Figure 4 is a horizontal sectional view through a portion of the web-drive and adjacent parts;

Figure 5 is a detail section taken on the line 5—5 of Figure 3;

Figure 6 is a detail section through the governor which may be employed;

Figure 7 is a fragmentary side elevation showing the mounting of certain web guide rollers;

Figure 8 is a detail plan of a fragment of the calendar strip;

Figure 9 is a detail section taken on the line 9—9 of Figure 3;

Figure 10 is a detail section taken on the line 10—10 of Figure 9;

Figure 11 is a detail section taken on the line 11—11 of Figure 9; and

Figure 12 is a detail section taken on the line 12—12 of Figure 7.

Referring specifically to the drawings wherein like reference characters designate like or similar parts, the apparatus includes a frame, casing or body as at 13, which is preferably sectional so as to permit assembly and disassembly, inspection and repair of the different parts as desired. Suitably attached to the casing 13 usually in an offset manner as shown, is a clock 14. Said clock may be read from the front of the casing, and such casing may have a panel or wall 15 in its front equipped with a window 16, in which a light or glass 17 may be disposed and behind which data 18, on a flexible web or tape 19 may be viewed. Such data 18 are disposed in horizontal rectangular spaces and preferably each space contains the day of the week, the month, the date, and the year, or any equivalent and the data for one day at a time correspond to the size of the window 16 and is adapted to be read in connection with the clock simultaneously, as will be apparent from a consideration of Figure 1.

Said tape 19 is flexible and of a length for any desired period of time, usually containing designations for an entire year. Such tape is discontinuous and one end is separably connected to a roller 20 and the other end is separably connected to a roller 21. The connections between the ends of the tape and the rollers may be made in any desired way as by means of lugs on the rollers and openings in the tape, by tacking the tape to the rollers when the latter are of wood, or otherwise. Since the tape is detachable, it may be replaced from time to time as the printed data thereon expire from year to year or other predetermined periods. Said web 19 is guided in its travel over a shaft or roller 22 preferably having a rubber surface 23 and also guided between rollers 24 and 25, preferably having rubber sufaces at 26. The rollers 24 and 25 travel in opposite directions and grip the web 19 in any predetermined degree of friction. All of the rollers 20, 21, 22, 24 and 25 are adapted to be positively driven and are inter-geared to avoid any slack in the web. Mechanism is provided whereby the web adjacent the end of each day, for instance between ten and twelve o'clock p. m., will escape or advance the distance of one space 18. Obviously, the parts may be arranged and proportioned so that the actual time taken during the escapement or day change may be varied as desired or controlled.

Within the casing 13 are parallel supporting walls 27 and 28 and 29, connected together rigidly in any suitable manner as by means of rods or bolts 30 and nuts 31 screwed thereon. Said rolls 20 and 21 are detachable from heads 32 and 33 carried by shafts 34 and 35, respectively. The shafts 34 are in the form of slidable plungers having portions 36 extending inwardly beyond the heads and being preferably square in cross section and engaging correspondingly shaped bores 37 of the rollers 20 and 21. Said shafts or plungers

34 slide through openings 38 in the wall 27 and also are slidably mounted by brackets 39 fastened to the wall 27. Expansive springs 40 are located within the brackets, bearing against the same and against pins 41 on the plungers, thereby normally urging and maintaining the lugs 36 detachably engaged with the rollers 20 and 21. Such plungers may be displaced through pulling of heads 42 thereon, to disengage the rollers 20 and 21.

As to the heads 33, they are carried by the shafts 35 as aforesaid which are journaled in the walls 28 and 29. Such heads 33 have square lugs 43 detachably engaged in the square bores 37. Pins 44 are shown on the rollers 20 and 21, for engagement with openings adjacent opposite ends of the calendar web 19.

Said shafts 24 and 25 are mounted so that the latter may be adjusted slightly relatively to the former to increase or decrease the degree of friction between the rollers and the web. To this end, one terminal of the shaft 25 extends through an enlarged opening 45 in the wall 27 and is journaled in a bearing arm 46 outwardly thereof and which bearing arm is cutaway as at 47, to avoid interference with the adjacent end of shaft 24. Said bearing arm 46 is adjustable, having a bifurcated end 48, engaging over a bolt 49 to which it is adjustably clamped by means shown at 50 as in Figure 3.

Within the casing 13 at one side thereof is a spring motor 51 on the shaft 52 to which a gear 53 is connected by hard friction. Such gear enmeshes with a gear 54 connected by hard friction to the shaft 35, said gear 54 meshing with a gear 56 connected by hard friction to the shaft 29. A gear 57 is enmeshed with gear 56 and connected by hard friction to the shaft 24. An escapement wheel 58 is connected by hard friction to a shaft 59 suitably journaled within the casing 13 and with the shaft 59, a gear wheel 60 is rigid and in mesh with the gear wheel 56. Such gear wheel 60 meshes with a gear wheel 61, suitably journaled on a shaft 62 journaled within the casing 13 and in mesh with a gear wheel or pinion 63 connected by hard friction to the shaft 22.

Said escapement wheel 58 has two lugs 64 and 65 thereon providing a notch or space 66 between them and into which an end 67 of a detent 68 normally extends, such detent being pivoted at 69 to the wall 29 and having a leaf spring 70, suitably mounted, contacting therewith and urging the hooked end 67 out of engagement with the notch 66. At one end of detent 68 a pin 71 is pivotally connected at 72, being vertically slidable in a suitable bracket 73 fastened to the wall 28 and the lower end of which pin 71 follows the contour of a cam 74, the pin being maintained in contact with the periphery of the cam through the expansion of the said spring 70.

When the escapement wheel 58 is disengaged by the detent 68, such wheel will travel counterclockwise under the urgency of the spring motor 51 until the lug 65 abuts a depending end 75 of an abutment lever 76 pivoted at 77 to the wall 28 and which abutment lever 76 is pressed down upon escapement wheel 58 by means of a projection 78 extending from the shaft 22, making one complete revolution and passing on by abutment lever 76 to such distance as may be necessary.

A bracket 79 is fastened to the adjacent wall 28 and slidably mounts a vertical pin 80 disposed beneath the abutment lever 76, and having its lower end resting on and following the contour of a cam 80'.

Said cams 74 and 80' are connected by hard friction to a shaft 81 which is journaled in suitable brackets 82 and 83, within the casing.

Said shaft 81 makes a complete revolution each twenty-four hours and it is driven from the hour hand mechanism 84 of the aforesaid clock 14, a gear wheel 85 being enmeshed with such mechanism 84. Said gear wheel 85 is connected by hard friction to the shaft 81. A conventional governor mechanism 86 is associated with and regulates the speed of movement of the tape moving mechanism as best shown in Figures 5 and 6, the same being driven through a chain of gearing generally designated 87. Such governor may include a fixed casing 88 in which a pinion 92 driven by the chain of gearing 87, is disposed. A U-shaped guide 89, disposed out of the zone of meshing of pinion 92 and gear chain 87, rotates with pinion 92 and is slidable on such pinion 92 transversely to its axis of rotation. Guide 89 carries a weight 90. An expansive coil 93 normally holds the weight 90 disengaged from the casing 88, such spring 93 at one end engaging the pinion 92 and at the other end engaging a plate or abutment 89' carried by the guide 89. Weight 90 acts as a centrifugal governor and brake shoe since the weight 90 is thrown outwardly by rotation of the pinion 92 and will engage and have a braking effect on the interior of the stationary casing 88.

While we have shown a clock such as 14, adapted to be operated by a spring motor, it is to be understood that such showing is by way of example only as the clock may be operated electrically. The same is true of the motor 51 which is shown as a spring motor adapted to be wound by a key or the like as at 93', it being understood that an electric motor may be substituted for the motor 51 and both the motor of the clock and the motor used in lieu of that at 51, operated electrically and automatically from the same source of power.

Presuming operation, the clock operates the shaft 81 one revolution each twenty-four hours. The various shafts and parts mounting and guiding the movement of the calendar tape 19 are inter-geared by the various gear wheels and the like and cannot normally turn due to the fact that the escapement lever 63 at its end 67 is disposed in the notch 66 between the lugs 64 and 65. However, at a predetermined time near the end of the day, for instance at 10:20 p. m., governed by the position of the cam 74 on the shaft 81, such cam permits the pin 71 under the urgency of spring 70 to move off of its lobe or highest point into the position of Figure 10, the detent 68 moving into the full line position shown in Figure 9, thereby releasing the escapement 58 so that the spring motor 51 through the various gears illustrated, will rotate the escapement wheel 58 clockwise until the lug 64 abuts the lug 75 of the abutment lever 76. Thereafter, at midnight, the timing and operation of the cam 80' and associated parts is such that the said cam lifts the pin 80, accordingly raising the lug 75 above the lug 64, since the gearing in the meantime moves the lug 78 out of engagement with lever 76, permitting further clockwise movement of escapement 58 until the notch 66 registers with projection 67 and the latter under agency of spring 70 engages the same, arresting further movement of the escapement until near the end of the preceding day. In the meantime, the

various shafts through the gearing mentioned, as at **20**, **21**, **22**, **24** and **25**, will have been moved a predetermined distance or space, thus moving the data for the next day into registry with the window **16**. The device thus operates to place the different days consecutively opposite or in registry with the window **16**, through the motion of the parts imparted by the clock spring and the spring **51**, or such parts operating fully automatically when the clock is electrical and the motor **51** is electrical.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

We claim as our invention:

1. Apparatus of the class described having a shaft rotatable under clock control, a calendar web, parts to operate said calendar web under control of said shaft, including an escapement member, a detent engaging the escapement member, means under control of said shaft to operate the detent, abutment means to arrest movement of the escapement member, means under control of said shaft to displace the abutment means to permit the escapement member to return to normal position, means to urge the detent into engagement with the escapement member in normal position, the last mentioned means including a cam on said shaft and a pin following the cam.

2. Apparatus of the class described having shafts rotatable under clock control, a calendar web, parts to operate said calendar web under control of one of said shafts, including an escapement member, a detent engaging the escapement member, means under control of said one shaft to operate the detent, abutment means to arrest movement of the escapement member, means under control of said one shaft to displace the abutment means to permit the escapement member to return to normal position, means to urge the detent into engagement with the escapement member in normal position, the last mentioned means including a cam on said one shaft and a pin following the cam, and a lug on one of the shafts to normally engage the abutment means to prevent premature displacement thereof.

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